life insurances, ranking #1 worldwide in 2012. For individuals who purchase private insurances to add protections it is natural to ask which insurance policy provides the most favorable return. The objective of this study is to establish a valuation system for private life and annuity insurance plans using a robust, flexible, distributed cloud computing architecture. **METHODS:** Using the fixed income model and by constructing polynomial interpolated yield curves from Taiwan government and corporate bonds, we can approximate the internal rate of returns of each insurance policy and compare their performance versus the time value of money of the total investments. We extracted daily information from over-the-counter markets and Taiwan interbank interest rates to compute daily changes in policy values. **RESULTS:** Shown in our experiments, by investing in insurance policies from 30 to 85 years old, the policies provide -0.1% to -1.4% returns, which represents the total value of investments has diminished throughout the years. Even in the event of benefit claims (severe injury or death), the insurances provides -0.2% to 1.5% returns. For annuity insurances, early investments do not provide advantages, i.e., by investing at 30 and by 50 years old, the returns is approximately the same at 85 years old. **CONCLUSIONS:** We establish a robust, flexible and efficient valuation system for private life and annuity insurance plans. Results show that even by purchasing private insurances, the extra protections provided is still inadequate to cover major emergency medical conditions.

PHP66

THE EFFECT OF MASSACHUSETTS HEALTH CARE REFORM ON HOSPITAL INPATIENT USE

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OBJECTIVES: The objective of this study is to estimate the effects of the Massachusetts health care reform on the use of inpatient hospital services in Massachusetts. **METHODS:** We used Healthcare Cost and Utilization Project State Inpatient Databases for the years 2004-2011 in 37 states including Massachusetts. We identified a control group of hospitals from other states for each year based on their characteristics that match the hospitals in Massachusetts. Hospital-specific utilization was summarized by calendar quarter, and difference-in-differences time series models were estimated based on the multi-year implementation of reform initiatives in Massachusetts. We identified a pre-reform period (Q1 2004-Q3 2006), during period (Q4 2006-Q2 2007), and two post-reform periods (Q3 2007-Q1 2009 and Q2 2009-Q4 2011). Dependent variables were the quarterly estimate for each hospital of the natural logarithm of total discharges, average length of stay, the coefficient of variation in length of stay, and cost per discharge. Independent variables included annual measures of the Herfindahl-Hirschman Index, county-level measures of population, household income, unemployment rate, labor force participation rate and a dichotomous variable indicating if the hospital was in Massachusetts and the stage of policy implementation in the state. The regression models also controlled for the differential effects of the dramatic changes that occurred across the country. **RESULTS:** Our descriptive results indicate that the number of discharges grew more rapidly in Massachusetts than in the rest of the country. Our risk adjusted results show that the full implementation of the reform legislation led to 5.8% more discharges, 5.0% shorter lengths of stay, a 2.5% reduction in the variation in a hospital's length of stay and no change in cost per discharge – all relative to control hospitals. **CONCLUSIONS:** Massachusetts health care reform had a modest impact on inpatient utilization and that impact became greater the longer the reform was in place.

PHP67

SYSTEMATIC REVIEW OF COST EFFECTIVENESS OF TOP SELLING PRODUCTS

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OBJECTIVES: Cost effectiveness analyses are required by various Health Technology Assessment (HTA) agencies as part of the reimbursement submission. To gain an insight into the methods used, we analyzed the cost effectiveness studies for the top twenty highest selling drugs (~$90-100B worldwide sales). **METHODS:** The Top 20 drugs were selected based on their worldwide sales. For this analysis, we segmented these drugs into categories such as primary care, specialty, small molecules, biologics, therapy areas, and availability of generic alternatives. We analyzed the cost effectiveness studies that were published in peer-reviewed journals. Searches were conducted using generic names of the drugs and the phrase "cost effectiveness" in an abstract of the published study. **RESULTS:** Between 2008-2013, the number of published studies on "cost effectiveness" has increased by more than 35%. There is a large variability in CERs for same drugs for different indications, in some cases also varying by biomarkers. Primary care drugs had lower and less variable CERs than specialty drugs. Variations also exist in methodology used by different groups in modeling cost effectiveness, especially for time horizon and comparator. The majority of primary care drugs were modeled for a time horizon of 35-40 years or for a lifetime to demonstrate cost effectiveness. **CONCLUSIONS:** This analysis shows the range, variability, and methods used for calculation of ICER values for these high budget impact drugs and provides lessons for executives and policy makers.

PHP68

HOW ARE BIOSIMILAR MEDICINES APPRAISED AS HEALTH TECHNOLOGIES? AN EVALUATION OF APPRAISAL PROCESSES IN MULTIPLE COUNTRIES

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OBJECTIVES: Biosimilars are biotherapeutic products that are similar in terms of quality, safety and efficacy to an already licensed reference biologic. There are strict guidelines in place for the regulatory approval of biosimilars. However, HTA agencies differ in their approaches to appraisal of biosimilars. This study examined the factors influencing regulatory and reimbursement decisions for biosimilars in different countries. **METHODS:** A qualitative documentary analysis was performed of the regulatory approval and reimbursement of four biosimilars in nine countries. Regulatory and HTA documents were analyzed to identify the processes of appraisal, indications assessed and key factors driving agency decisions. **RESULTS:** Overall, twenty-one indications were appraised for the four biosimilars collectively; 90% of appraisals produced a decision of 'recommended', 9% were 'recommended with restrictions', and 1% were 'not recommended'. Demonstration of clinical comparability between the biosimilar and the reference product was a requirement in all countries. Cost-minimization and budget impact analyses were key economic decision factors. Some agencies accepted the notion of comparability for extrapolation to indications other than those that had been studied in clinical trials. Pricing dynamics were seen to differ between biosimilars, driven by a combination of pricing strategies for reference biologics, and payer and physician reservations about potential risks. **CONCLUSIONS:** Regulatory bodies follow common principles of assessment but differences exist with respect to scope and choice of reference product. Important factors common to reimbursement agencies included comparable efficacy and safety of biosimilars to the reference products, and economic considerations; however, they differed in their appraisal processes. The relative weight of price versus potential risk may vary with the disease area targeted by the biologic. The currently approved biosimilars have been relatively simple biologics to re-create and therefore evaluate, but the experience gained should be built upon to address the challenges of assessing the increasingly complex biosimilars being developed.

PHP69

THE ROLE OF PATIENT-PHYSICIAN COMMUNICATION ON HEALTH CARE COSTS

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OBJECTIVES: This paper empirically investigates the role of patient-physician communication on the likelihood of receiving appropriate care, and its effect on health care costs at hospital inpatient settings. **METHODS:** The Healthcare Cost and Utilization Project (HCUP) 2008-2010 State Inpatient Databases (SID) for Florida were used in this analysis. Then, we linked Florida SID with Florida Physician Licensure, the American Hospital Association Annual Survey Database; and the Area Resource File. Our key covariate of interest is the association between Spanish speaking physicians and Hispanic patients with the total costs associated with that visit. We started with descriptive analysis. Next, we used logistic regression models to assess likelihood of choosing a Spanish speaking physician over other physicians. Next, we used generalized linear regression models to estimate and then compare the health care costs associated Hispanic patients with Spanish speaking physicians against others. We also used Oaxaca-Blinder (OB) Decomposition to compare the health care costs between and within Hispanic and non-Hispanic white patients across Spanish and non-Spanish speaking physicians. To assess the robustness of our baseline results, we conducted several empirical estimations and tested their significance. **RESULTS:** Our risk adjusted estimates show that the odds ratios for Hispanic patients registered to Spanish speaking physicians is 3.8 compared to non-Hispanic white patients registered to Spanish speaking physicians. We found that hospital inpatient costs associated with Hispanic patients registered to Spanish speaking physicians is about $650 less relative to Hispanic patients registered to non-Spanish speaking physicians. Our risk-adjusted results also show that hospital inpatient costs associated with non-Hispanic white patients registered to non-Spanish speaking physicians relative to the non-Hispanic white patients registered to Spanish speaking physicians are lower by about $700 per visit. **CONCLUSIONS:** We found a strong correlation between Hispanic patients and Spanish speaking physicians. Better communications between patients and providers can provide patients with better care.

PHP70

DO MEDICARE ADVANTAGE ENROLLEES VISIT HIGH-COST HOSPITALS?

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OBJECTIVES: The primary objective of this study is to examine the hospitals' risk-adjusted costs, and Medicare Advantage (MA) enrollees and Fee-for-service (FFS) beneficiaries' use of high-cost hospitals. The second objective of this study is to document the variation in racial and ethnic disparity in visiting high-cost hospitals within and between MA enrollees and FFS beneficiaries as policymakers mostly have focused on the location of care as an explanation for important disparities in many health outcomes. **METHODS:** We used 2006-2010 Healthcare Cost and Utilization Project State Inpatient Databases from California, Florida, Massachusetts, New York, Tennessee and Wisconsin; American Hospital Association Annual Survey Database; and Area Resource Files. We calculated the hospital cost index by dividing the actual total costs by casemix adjusted total costs. Next, we calculated three categorical values to define the dependent variable for each state, which takes value 1 if the hospital cost-index is less than 0.95; value 2 if it is within 0.95 -1.05; and, value 3 if it is greater than 1.05. We used ordered logistic regression models. We also estimated the same model using a different specification of high-cost hospital definitions to ascertain any effects resulting from sample sizes. **RESULTS:** We found lower prevalence of high-cost hospitals among MA enrollees than among FFS beneficiaries. Our risk adjusted results show that the odds ratios of visiting a high-cost hospital for MA enrollees range from 0.641 to 0.958 for all states. Our results show that non-white elderly patients associated with lower likelihood of visiting high-cost hospitals in in California and New York, and higher likelihood of visiting high-cost hospitals in Florida, Massachusetts, Tennessee and Wisconsin. **CONCLUSIONS:** MA enrollees mostly utilize low-cost hospitals for their health care needs. We find sizable geographic variation in visiting high-cost hospitals among minority elderly population.

PHP71

ACCESS TO SEXUAL REPRODUCTIVE HEALTH RIGHTS INFORMATION AMONG THE YOUTH: A CASE OF GUCHA SOUTH DISTRICT, KISII COUNTY-KENYA

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